Water Quality Program Policy

Chapter 1: ***WQP Policy 1-11***

References: *Federal Clean Water Act, Section 303(d) [33 USC 1313(d)]*
40 CFR 25
40 CFR 130
40 CFR 131
Chapter 173-201A WAC
Chapter 173-204 WAC

Revised:

Assessment of Water Quality for the Clean Water Act Sections 303(d) and 305(b) Integrated Report

Purpose: This policy describes how water body segments will generally be assessed and placed in various categories according to water quality status and priority for further actions. This policy also provides specifications for data submittal and data quality necessary for inclusion in the assessment. This policy, in combination with the guidance documents referenced herein, constitute the "Listing Methodology" for the Integrated Report composed of the Section 303(d) list and 305(b) report as required by the federal CWA and the Environmental Protection Agency (EPA).

Application: This policy applies to Ecology staff when conducting assessments for the Integrated Report to prioritize Total Maximum Daily Load (TMDL) efforts. It is also intended as guidance for all parties submitting data for the assessment process or developing data collection programs for use in future assessments.

Contents:

1. Introduction and Background

The purpose of the assessment is to determine the status of state water quality based on water quality standards criteria and available data. The state is required under Section 303(d) of the federal Clean Water Act and the EPA's implementing regulations (40 CFR 130.7) to periodically prepare a list of waters in which designated uses are impaired, as determined through the use of the water quality standards. In Washington, this list is prepared by the Department of Ecology (Ecology). The state is also directed to periodically submit other information in accordance with Section 305(b) of the CWA. The process of issuing the call for data and then assessing the data in preparation of the list is called the "listing cycle."

The surface water quality standards to be used for the assessment process are in Chapter 173-201A WAC, *Water Quality Standards for Surface Waters of the State of Washington*, see Latest Approved Water Quality Standards and the federal National Toxic Rule and Human Health Criteria in 40 CFR Part 131 (Federal Register Vol. 57, No. 246, and as updated). For contaminated sediments, the standards are in Chapter 173-204 WAC, *Sediment Management Standards.*

The criteria and guidance in this policy have been developed to guide the assignment of waters into one of five categories. All waters in the state will be placed into one of the categories. Only one category, Category 5, represents the 303(d) listed waters. The criteria for the 303(d) list were developed to identify only those waters for which there is valid documentation of impairment. These waters require the preparation of water quality improvement projects , known as TMDLs, in accordance with the CWA. Waters showing apparent exceedances of criteria due to documented natural background conditions and with no significant human contribution will not be listed in Category 5. Some waters that are impaired will not be placed in Category 5 because, for various reasons, no TMDL is required (see Category 4). As part of the

listing process, the waters placed in Category 5 will be prioritized and scheduled for TMDL studies in accordance with the watershed schedule outlined in Section 9.

The remaining categories (Categories 1 through 4, including three subcategories of Category 4) are intended to inform other water quality efforts in Washington, and to inform the public about the known condition of the state's waters.

Table 1. The Water Quality Assessment Categories.

Category 1. Meets Tested Criteria	Not known to be impaired	EPA approval and TMDL not required
Category 2. Waters of Concern		
Category 3. Lack of Sufficient Data		
Category 4. Impaired But Does Not Require A TMDL because **4a.** Already has a TMDL **4b.** Has a Pollution Control Project **4c.** Is impaired by a Non-Pollutant	Impaired	
Category 5. The 303(d) List		EPA approval and TMDL required

The draft results of the overall water quality assessment will be submitted to EPA and for public review, but only the 303(d) list (Category 5) is subject to EPA approval. EPA has authority to disapprove the Category 5 list and to propose to add and remove waters to Category 5; these actions are also subject to public review.

Data submitted must include verification of appropriate Quality Assurance/Quality Control (QA/QC) to be considered in the assessment. See Section 4 and the "Water Quality Data Act Policy" for more information.

2. Waterbody Segments and GIS Layers

Waterbodies covered by this policy include rivers, streams, lakes, Puget Sound, the Strait of Juan de Fuca, coastal waters, waterways, and all other surface waters subject to the regulatory authority of Ecology according to RCW 90.48, "Water Pollution Control."

As part of the Assessment process, a waterbody segmentation system must be identified for reporting the extent or size of the waterbody based on the data assessed. Washington State's history of reporting waterbody segments has varied in past reporting cycles. In the 1998 and 2004 assessments, Ecology reported the majority of waterbody segments of rivers, streams, and lakes as the portion of the waterbody lying within a given section of a township and range. In open waters – including marine waters, lakes of more than 1,500 acres, and estuarine areas (the lower end) of some large rivers – segments are defined by a rectangular grid sized at 45 seconds longitude by 45 seconds latitude (approximately 2,460 feet by 3,650 feet). Contaminated sediment site size is defined by the mapped polygons in the SEDQAL database.

When data is collected, it is reported as being taken from a specific location known as the sampling station. The best way to describe the location of a sampling station is by latitude and

longitude. These coordinates allow Ecology to apply the collected data to future and past water segmentation schemes.

To promote national consistency in measurement and reporting, EPA has recommended that states use the National Hydrography Dataset (NHD) for segmentation of waterbodies. Additional information on the NHD is available at www.epa.gov/owow/monitoring/georef/nhd.htm. Recognizing the benefits of reporting segments based on hydrologic features, Ecology intends to move towards application of the NHD for future listing cycles when it becomes available for use at the 1:24,000 scale. Changes from one segmentation system to another may cause different assessment results for a given waterbody. The segmentation system for listing cycles for the year 2006 and beyond will be described in detail in the associated "call for data".

3. Coordination with Tribes and Other States

In accordance with the Centennial Accord, this policy supports intergovernmental cooperation between the state and the federally recognized tribes in Washington State in the development of the state's 303(d) list. The policy relies on the 1997 *Cooperative Management of the Clean Water Act 303(d) Program for the Tribes in Washington State, the Washington State Department of Ecology, and the U.S. Environmental Protection Agency Region 10*.

Tribes have independent authority for setting water quality standards and implementing regulations for waters on reservation lands under the Clean Water Act. Washington State is bound under the Supremacy Clause of the United States Constitution, article VI; c1.2, to carry out the provisions of the United States Treaties and relevant federal court rulings. Thus, Ecology's 303(d) list will not address on-reservation waters. This policy is not intended to and does not enlarge, diminish, or define the jurisdiction of the state or the tribes, nor does this policy limit the right of the state or any tribe to act in other forums to protect its rights.

The states of Oregon and Idaho also share jurisdiction over water quality in waters that flow through or are located between neighbor states. Although water quality standards and criteria may differ, coordination of listing decisions for shared waters will be evaluated during the assessment for the report.

Ecology staff will provide an opportunity to confer on a government-to-government basis with each interested tribe with affected natural resources and neighboring states during the following steps in the development of the state's 303(d) list:

- Policy development
- Preparation of draft and final list in Category 5
- Responsiveness summaries.

Occasionally, data is submitted to Ecology about water quality of waters on reservation lands and waters of neighboring states. Ecology will receive this information, but will not make listing decisions for such waters. Ecology's intent is to make listing decisions by mutual agreement

through timely sharing of information, clarification, and discussion. The state and each individual tribe are responsible for making their own final listing recommendations to EPA within its respective 303(d) program.

4 Public Participation and Submitting Information for the Water Quality Assessment

Individuals and organizations can participate in the assessment of Washington's waters, 303(d) listing, and TMDL process in any of the following ways:

- Review and comment on this listing policy and methodology
- Submit water quality data for the assessment during the "call for data" period
- Review and comment on Ecology's proposed 303(d) list and other assessment categories
- If EPA disapproves of the proposed 303(d) list or proposes additional waters for listing, then review and comment on EPA's actions
- Review and comment on the proposed TMDL priority list

The "call for data" will be announced and will be open for a minimum of 30 days. Data and other information received are then assessed for the update of the Water Quality Assessment, and results are then announced for public review and comment.

Data collected in recent years within the time window dates specified in the call for data may be submitted for consideration in the assessment. Data submitted previously that Ecology did not use because of QA concerns should not be resubmitted unless new QA information is submitted that enables Ecology to use the data.

Data which are less than five years old and meet the other requirements outlined in this policy will be consolidated and assessed with other data of the same waterbody segment and parameter. Data submitted which are older than five years will only be considered by Ecology on a case-by-case basis in the following cases:

- No newer data exist for the given waterbody segment and parameter or the existing data do not meet the requirements of this policy;
- The data are part of a larger dataset or long-term monitoring which include data younger than five years old for the same waterbody and parameter; or
- Information or rationale is provided to show that the data reflect current conditions.

Newly submitted data greater than five years old must meet all current data requirements and will be assessed according to the criteria described in this policy. Older data may be used when necessary to determine historical natural conditions if it meets the QA requirements in place at the time of its collection.

Numeric data must be submitted to Ecology's Environmental Information Management (EIM) database to be used for the assessment. Exceptions to this requirement may be made if the data submitter has made alternate arrangements with Ecology, or data is retrieved from other state and federal databases that meet the same level of quality. Information on electronic data submittals to EIM can be found at the following website, http://www.ecy.wa.gov/eim/. Data in

EIM is available to the public on Ecology's website and is accessible for independent review of listing decisions. Information other than numeric data, such as narrative information, may be submitted directly to the Water Quality Assessment coordinator.

Quality assurance requirements must be met by all data used for this assessment. Sampling and analysis must be conducted under a documented quality assurance project plan or other quality assurance procedures that Ecology determines to be equivalent in providing for high quality data.

Guidance for preparing a quality assurance project plan and for assessing data is available from several sources.

See Ecology:

- *Guidelines for Preparing Quality Assurance Plans for Environmental Studies,* (available at http://www.ecy.wa.gov/biblio/0403030.html);
- *Sediment Sampling and Analysis Plan Appendix: Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards*, (April 2003), publication no. 03-09-043, (available at http://www.ecy.wa.gov/programs/tcp/smu/sediment.html);

Department of Natural Resources:

- TFW-AM9-99-005, DNR publication 107

EPA:

- *Requirements for Quality Assurance Project Plans* , (available at http://www.epa.gov/quality/qs-docs/r5-final.pdf)
- EPA *Guidance for Quality Assurance Project Plans* (available at http://www.epa.gov/quality/qs-docs/g5-final.pdf
- EPA: *The Volunteer Monitor's Guide To Quality Assurance Project Plans,* EPA 841-B-96-003, (available at http://www.epa.gov/owow/monitoring/volunteer/qapp/vol_qapp.pdf)
- EPA *Guidance on Environmental Data Verification and Data Validation* (available at http://www.epa.gov/quality/qs-docs/g8-final.pdf)
- EPA *Data Quality Assessment: A Reviewer's Guide* (available at http://www.epa.gov/quality/qs-docs/g9r-final.pdf)
- EPA *Data Quality Assessment: Statistical Tools for Practitioners, (available at http://www.epa.gov/quality/qs-docs/g9s-final.pdf)*

Documentation of data verification and data validation must be provided with all data submitted for this assessment process, indicating that the objectives of the quality assurance project plan or equivalent quality assurance procedures were met. The assessment of the data must also consider whether the data, in total, fairly characterize the quality of the water body at that location at the time of sampling.

Data and information submitted by a third party that were initially collected by other entities must document that the required quality assurance objectives were met. If this documentation of

data verification and data validation (or other equivalent assurance) is not provided, the data will not be used in the assessment.

The data submitter should provide Ecology with the following information either before or accompanying data submission.

A. An electronic copy of the QA Project Plan (or the equivalent document), revisions to a previously submitted QA Project Plan, and any other information necessary for Ecology to evaluate the data according to the guidance for exceptions

B. The applicable dates of the QA Project Plan, including any revisions.

C. Written assurance that the methods and procedures specified in the QA Project Plan were followed.

D. The information that satisfies the required fields in the EIM database including the name of the laboratory(s) used for sample analyses and its Laboratory ID number, along with a report of results and a data verification report provided by the laboratory.

E. Any field notes, laboratory comments, or laboratory notations concerning a deviation from standard procedures, quality control, or quality assurance that affects data reliability, data interpretation, or data validity.

F. The data validation report, the quality assurance/quality control documentation, including the analytical methods used by the laboratory, method number, detection limits, quantitation or minimum levels, if available, and any quality control samples and standards necessary to properly interpret data different from that stated in the QA Project Plan.

G. If requested by Ecology for interpreting or validating data, any other information, such as complete field notes, photographs, climate, or other information related to flow, field conditions, or documented sources of pollutants in the watershed.

H. The following information must be retained for at least five years (ten years for records associated with data from grant and loan projects) and provided to Ecology if requested:

   i. Other information, such as complete field notes, photographs, weather, or other information related to flow, field conditions, or documented sources of pollutants in the watershed for interpreting or validating data.

   ii. All records associated with the generation and interpretation of sample results including documentation related to adherence to the QA Project Plan, or coordinate with Ecology to ensure that adequate records are maintained.

I. Field instruments, such as multi-parameter devices (Hydrolabs™), must be operated and calibrated according to the manufacturer's recommendations, or other acceptable demonstrated method. Calibration information and any other appropriate documentation of accuracy must be submitted if requested by Ecology.

This documentation requirement does not apply to data submitted for water quality assessments prior to the 2006 water quality assessment.

Documentation must be available for review upon Ecology's request. If Ecology determines there are flaws in quality assurance planning or implementation that reduce confidence in any submitted data, including data previously provided during earlier assessment cycles, then those data will not be used as a basis for placing a waterbody segment in Category 1, 2, or 5.

Verification of adherence to Quality Assurance requirements may be examined by Ecology through the use of a selected sampling of projects entered into EIM. The results of the limited audit will be used to determine if additional investigation is warranted. Corrective action may include the censoring of QA levels entered into EIM, rejection of data, or other actions deemed appropriate.

General Requirements

The data submitter must ensure that chemical, microbiological, physical, radiological, and toxicological samples (excluding data generated by field methods) are analyzed in a laboratory accredited by Ecology or obtain a waiver to this requirement in accordance with Ecology Executive Policy 1-22. Use of laboratories not accredited by Ecology must be approved prior to initiating of monitoring by the monitoring entity seeking and obtaining a waiver to the Executive Policy 1-22 requirement. A list of laboratories and the methods for which they are accredited can be found at *www.ecy.wa.gov/programs/eap/labs/labs_main.html*. Policy 1-22 does not apply to data obtained in the field or to benthic analyses.

The minimum information required in submittals includes:

- The location of each sample station in latitude and longitude
- Waterbody name and sampling location description [provide example]
- The date (and time, for dissolved oxygen and temperature) the sample was taken
- The pollutant or condition measured
- The measured value
- The unit of measurement
- For nondetect or non quantifiable data, the "less than" value associated with the method detection or practical quantitation limits
- The method used to measure the pollutant or establish the condition
- The name of the individual submitting the information
- The source of the information [provide example]

(We plan to develop a form for submitting the following information in an appendix)

Submittals may include additional information, including documentation of associated field conditions such as adjacent land uses, weather during sampling, and suspected and likely sources of water quality problems, and identification of the persons conducting the sampling and analysis. Examples of adjacent land uses include residential, industrial (specify the industry, if possible), municipal, and agricultural (dairy, cropping, forage crops, horse or cow pasture). Identification of the suspected or likely sources of water quality problem should be accompanied by an explanation of how that identification was made.

Data submittals must include precise, sufficient information on the name of the waterbody and location of the sample station to allow for accurate mapping. The longitude and latitude of each sample station and associated reference datum is required, (e.g. North American Datum 1983 or North American Datum 1927). For rivers, streams, and lakes less than 1,500 acres, the township, range, and section is also required.

For more guidance on sampling issues and environmental study design, see Ecology: *Technical Guidance for Assessing the Quality of Aquatic Environments*, publication #91-78; and EPA Document QA/G-5S, *Guidance for Choosing a Sampling Design for Environmental Data Collection* (EPA, 2001).

Metals must be sampled using clean sampling and analytical techniques, or appropriate alternate sampling procedures or techniques. For guidance, see EPA, *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels,* 1996.

Water and sediment testing should be by an approved method with a quantitation limit that yields reliable results at concentrations that are less than the criterion. (For guidance on quantitation limits refer to Tables VI-2 and VI-3 as updated in the Ecology Permit Writer's Manual, ECY Publication #92-109 and the *Sediment Sampling and Analysis Plan Appendix* for sediment analyses.) The detection limit is a value above zero and below the quantitation limit. Criteria values are often so low that they fall within the number line in the vicinity of detection and quantitation levels. When the criterion is below the detection limit, sample data values that are above the detection limit will be considered to exceed the criterion. When the criterion is above the detection limit, sample data values that are above the detection limit but below the quantitation limit are not considered to exceed or meet the criterion.

Specific Requirements

In addition to the general requirements above, parameter-specific requirements can be found in Section 8.

Ecology Contacts for Submittal

For more information on how to submit data, see the Ecology 303(d) website at:
www.ecy.wa.gov/programs/wq/303d/index.html

Or contact Ecology staff at:
303d@ecy.wa.gov
(360) 407-6400

To submit data, see the EIM website at:
http://www.ecy.wa.gov/eim/

5 Categories

Waters in Washington State (except on reservation lands) will be assigned to one of the five categories described below. These five categories are based on, though not identical to, the categories recommended in EPA's *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (July, 2005).

Only one category, Category 5, constitutes the 303(d) list of impaired waters. All the categories together represent the statewide assessment of Washington's water quality and will be submitted to EPA and the public as the "Water Quality Assessment," referred to as the "Integrated Report" in EPA guidance.

When data are available for more than one water quality parameter in the same water, Ecology will do a separate assessment for each parameter. For example, a waterbody segment that is placed in a category due to one pollutant may also be placed in a different category based on another pollutant.

Category 1. Meets Tested Criteria

Where recent, available data is of sufficient quality and quantity to show attainment of the water quality standard for a parameter within a segment, the segment will be placed in the *Meets Tested Criteria* category. To qualify for this category, some data must be available for a waterbody segment which shows attainment of the applicable water quality standard during a critical period. It is not sufficient merely to have a lack of evidence of impairment.

Placement of a water segment in a category does not constitute a determination of compliance or noncompliance with water quality standards for any other purpose.

Recent data is an important consideration when evaluating a waterbody that has been listed in categories 2, 4, or 5. A water that was at one time a concern and placed in Category 2 or a water that showed impairment but has been the subject of a cleanup action or TMDL implementation may be moved to Category 1. If the most recent data shows that the water is now attaining the criteria for that parameter as expressed in the parameter specific guidance, it may be moved to Category 1. Modification of hydrology, such as dam bypass or revised management of controlled flows, may also justify reevaluation of a listing if supported by data.

The placement in Category 1 does not necessarily mean that all is well in that segment because the segment may still be contributing to an impairment at a downstream location. A TMDL study will evaluate contributions of pollutants at all waterbody segments within the watershed and may assign pollutant reduction targets or loading limitations so that water quality standards can be met at all locations.

Placement in this category does not necessarily mean that all standards have been tested for or studied in the waterbody segment. A waterbody may be placed in this category for certain parameters while also being listed in another category due to a different pollutant.

Category 2. Waters of Concern

Sometimes data that are not sufficient for listing a waterbody segment on Category 5 may still raise a concern about water quality. Examples of this include:

- Data that show some exceedance of an applicable water quality standard, but fewer than is necessary to sufficiently determine the severity of the problem according to this policy.
- Data showing exceedances, but there are too few samples to gain confidence that it is not a sampling or analysis error.
- The data suggest impairment, but there is substantial contradictory information.
- Narrative information raises concerns, but is not sufficient for listing on Category 5.

In these and similar cases, the waterbody segment will be placed in the *Waters of Concern* category. Some specific situations when segments should be included in this category are described in Section 8. Situations not specifically described will be assessed by Ecology on a case-by-case basis.

This category applies when some credible data create concerns of possible impact to designated uses, but fall short of demonstrating that there is a persistent problem. To place a water in this category first requires a decision that the water should not be in Category 5. Once that decision is made, segments will be placed in the *Waters of Concern* category when there are remaining concerns that reduce confidence that the tested standards are in fact met.

The *Waters of Concern* category is intended to help Ecology and the public be aware of, track, and investigate these water quality concerns. Ecology and others should pursue as many opportunities as possible to conduct additional monitoring and sampling, incorporate the waterbody into existing studies, or find other means to confirm (and correct) or refute the suspected problem.

Category 3. Lack of Sufficient Data

When there is no data, insufficient data, or unusable data, regarding any water quality standard or designated use, the waterbody segment will be placed in the *No Data* category. This category will include all waters in Washington (except on tribal reservation lands) that lack sufficient information for placement in any other category. This category is not part of the 303(d) list.

Occasionally, Ecology receives unusable data that cannot be relied upon to determine the status of water quality. Examples of unusable data include:

- Quality control efforts are not documented.
- There are problems regarding quality assurance, sampling, laboratory procedure, or similar issues that do not meet the minimum requirements for a QAPP.
- Data shows that water is meeting criteria, but not enough data to confidently place the waterbody in Category 1.
- Data quality control documentation is available but Ecology has concerns about its reliability.
- The sample location information is not provided or is insufficient to apply the data to the appropriate waterbody.

- The data do not contain the required elements necessary for assessing compliance with water quality standards described in General Requirements of Section 4.

Category 4. Impaired but Does Not Require a TMDL

This category acknowledges those waterbody segments which are impaired but are not appropriate for listing in Category 5 because:

- EPA has approved the TMDL for the specified pollutant(s);
- An effective clean-up project other than a TMDL is already in place; or
- The impairment is not known to be caused by a pollutant and therefore a TMDL is not appropriate to address the impairment.

This category has three subcategories.

4a. Has a TMDL

When data show that a designated use is impaired by a pollutant, but a TMDL addressing that impairment has already been developed and been approved by EPA, the waterbody segment/parameter combination will be placed in the *Has a TMDL* category. A Category 5 listing is not required because the primary purpose of a listing – to lead to preparation and implementation of a TMDL – has already been achieved. This will not include cases when EPA has disapproved the TMDL and not yet adopted a federal TMDL, nor when Ecology determines that the TMDL is not being successfully implemented. This category is not part of the 303(d) list.

If sufficient data indicate that the water is no longer contributing to impairment within its watershed, then the segment will be placed in Category 1. (This will not necessarily end further implementation of the TMDL. That will be determined by the terms of the TMDL.) If a TMDL has been declared completed and implementation has ended, but at that time or later the water is again shown to be impaired, then the segment will be returned to Category 5.

If a TMDL has been approved to address the impairment of one waterbody segment, and a subsequent segment within the TMDL footprint is found to be impaired from the same sources, the second segment will also be placed in the *Has a TMDL* category if Ecology determines that the TMDL for the first segment will also fully address impairment of the second.

4b. Has a Pollution Control Project

When data show that a waterbody segment is impaired by a pollutant, but a local, state, or federal authority has approved a pollution control project (or sediment clean up plan), and Ecology determines that the project or strategy is expected to bring the waterbody into compliance, the segment will be placed in the *Has a Pollution Control Project* category. A 303(d) listing is not required because the pollution control project is designed to improve and attain water quality in a manner comparable to a TMDL. This will not include cases when Ecology determines that the project is not being successfully implemented. Progress on water

quality improvements is an essential element of a successful pollution control strategy. This category is not part of the 303(d) list.

The mere existence of pollution controls, such as permit requirements or water quality regulations, is not sufficient to qualify a waterbody segment for this category. To be placed in the *Has a Pollution Control Project* category, the pollution control project must meet all of the following criteria:

- Be problem-specific and waterbody-specific;
- Have reasonable time limits established for correcting the specific problem, including load reduction or interim targets when appropriate;
- Have a monitoring component to evaluate effectiveness;
- Have adaptive management built into the plan to allow for course corrections if necessary;
- Have enforceable pollution controls or actions stringent enough to attain the water quality standard or standards;
- Be feasible, with enforceable legal or financial guarantees that implementation will occur; and
- Be actively and successfully implemented and show progress on water quality improvements in accordance with the plan.

In addition to the conditions above, the project is more likely to gain approval if the following conditions are included:

- Have a description of management measures;
- Include an implementation schedule and measurable milestones;
- Describe criteria that are used to determine loading reductions achieved over time;
- Include an information /education component

Ecology will review each pollution control project that is submitted to determine if it meets these criteria. The timeframe for correcting the impairment will be considered reasonable if it is as fast as practical, given full cooperation of all parties involved, and if it is similar to the timeframe that would likely be developed under a TMDL.

Modeling may be required to show that attainment of water quality standards is likely. Documentation must be provided to clearly explain and support how the pollution control project meets the criteria for each specific pollutant and waterbody.

Any project may qualify if Ecology determines that it meets all of the requirements above. Examples that may qualify for this category include:

- CERCLA, MTCA, or RCRA sites with signed legal agreements (e.g., Records of Decision) and source control measures to prevent future contamination;
- Habitat Conservation Plans with specific plans to address water quality;
- Wastewater discharge permits or 401 Certifications with conditions or limitations that adequately address the pollutant(s) causing the impairment; or
- Local program developed to improve water quality that adequately addresses the pollutant(s) causing the impairment.

If two or more pollution control projects apply to the same pollutant in the same impaired waterbody segment, and neither project is sufficient alone but their combined effect meets the requirements for this category, then the segment would qualify for this category.

4c. Impaired but a TMDL is Inappropriate

Segments are placed in this category when the failure to meet the applicable water quality standard is caused by a type of pollution that is not appropriately addressed through the TMDL process.

Some designated uses of a waterbody segment may be impaired due to aquatic habitat degradation that does not cause an exceedance of a pollutant criterion. When data show that a waterbody segment is impaired for such reasons, it will be placed in this category. A Category 5 listing is not required because a TMDL would be ineffective in addressing this type of water quality problem.

Under federal statute, pollution is defined as the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water (CWA sec. 502(19)). Most pollution is caused by pollutants such as toxic chemicals, waste material, nutrients, sediments, and heat. However, pollution can also be caused by factors that are not pollutants. Some examples of non-pollutants that nonetheless cause impairment are:

- Physical habitat alterations;
- Physical barriers to fish migration, such as dams and culverts;
- Loss of habitat due to invasive exotic species;
- Flow alterations, including low flows and flashier systems; and
- Impaired biologic communities, when the impairment is not linked to a specific pollutant

TMDLs are designed to allocate the input of pollutants among sources. In the case of non-pollutants, the cause of the impairment cannot be allocated, so the TMDL process is not appropriate. Other state and federal requirements, including other applications of the state water quality standards and other requirements to satisfy those standards, may apply.

A determination of impairment can be based on either numeric or narrative information. If the source of impairment is unidentified but is suspected to be a non-pollutant, instead of a pollutant, the segment will be placed in this category.

Category 5. 303(d) List Impaired by a Pollutant and a TMDL is Needed

Waterbody segments impaired by a pollutant as determined by the methodology described in this policy or by well-documented narrative evidence of impairment will be placed in Category 5. This category will be submitted to EPA as the 303(d) list.

For waters expected not to meet applicable water quality standards, listing will need to be based on trend information showing that, while they currently meet standards, they are likely to be impaired by the next assessment cycle.

6. Assessment Methodology

The purpose of the assessment is to determine the status of state water quality based on water quality standards criteria and available data. The results will be used to meet Clean Water Act reporting requirements for Section 305(b) and to develop the Section 303(d) List. The 303(d) list helps determine priorities for TMDL scheduling and development. The assessment will be based on available data and information that meets the requirements of this policy. Generally numeric and narrative data will be used for assessment purposes. Modeled data that meets quality assurance procedures will be allowed when the status of water quality is being determined in relation to natural conditions.

Newly submitted data will be added to previously assessed data that is less than ten years old. Data older than 10 years will be used only if no more recent data exists to conduct the assessment. Older data must meet all QA requirements at the time of submittal, and will be compared against the current policy to make the assessment decision. Data older than 10 years will be used whenever necessary to determine historical natural conditions.

Listings from previous assessment cycles will not be reassessed according to this policy unless more recent information associated with the parameter and waterbody segment is made available. Data meeting the requirements of this policy may be reassessed if the segmentation scheme changes resulting in a resorting of data within segments.

Only one parameter value per day per segment will be used in the assessment. Replicate samples taken at the same time and location will be averaged. Otherwise, the highest measurement per day will be used, except for dissolved oxygen, for which the lowest measurement will be used, and except for pH, for which the highest or lowest measurement will be used as applicable.

Measurements of instantaneous concentrations will be assumed to represent the averaging periods specified in the state surface water quality standards for both acute and chronic criteria unless additional measurements are available to calculate averages.

Assessment of Data and Information Using Numeric Criteria

Assessment decision requirements for specific pollutant parameters are described in Section 8. Section 8 includes decision criteria based on data requirements, general assessment information and the category determination process for each parameter listed below.

- Bacteria
- Bioassessment
- Contaminated Sediments
- Dissolved Oxygen
- pH

- Total Phosphorus in Lakes
- Temperature
- Total Dissolved Gas
- Toxic Substances
- Turbidity

Assessment of Information using Narrative Criteria

The assessment of water quality can be based on narrative information. A segment will be placed in Category 5 on the basis of violating narrative criteria relating to pollutants when the information regarding that waterbody segment includes all of the following:

- Documentation of environmental alteration related to deleterious chemical or physical alterations, such as nutrients or sediment deposition, as measured by indices of resource condition or resource characteristic or other appropriate measure;
- Documentation of impairment of an existing or designated use is related to the environmental alteration on the same waterbody segment; and
- The pollutant causing the impairment is identified.

Narrative information regarding non-pollutants will be assessed in the same manner for possible placement in Category 4C *(Impaired by a Non-Pollutant)*.

Agency Advisories

Swimming, fish, or shellfish advisories issued by the state Department of Health (DOH), by local health departments, or similar advisories from other agencies are based on credible monitoring programs under the federal Food and Drug Administration rules. The monitoring programs directly assess the protection of designated uses.

Segments covered in whole or in part by a swimming, fish, or shellfish advisory will be categorized as follows:

- If the risk assessment parameters or other assumptions used by the agency issuing the advisory are cumulatively less or no more protective than those incorporated into the state standards or the national human health-based water quality criteria (e.g., toxics or pathogens), the segment will be placed in Category 5 for the specific parameter.
- If the parameters or assumptions used in issuing the advisory were based on more protective standards (that is, the advisory would be triggered by a less severe water quality problem), then the segment will be placed in Category 2.
- Closure or downgrades of approved shellfish beds by the state Department of Health that are based on assessment of actual fecal coliform data will be sufficient to place all marine grids overlapping the affected shellfish beds in Category 5 for fecal coliform.

The advisory must be based on fish, shellfish, sediment, or water column data specific to the waterbody segment. Ecology will defer to Department of Health's assessment prompting the advisory. Listings will not be based on shellfish closure zones around wastewater treatment plant outfalls, marinas, port facilities, or similar facilities unless the ambient bacteriological

water quality standard is exceeded, nor on advisories for marine biotoxins, nor on geoduck bed closures by the Department of Natural Resources. Listings will be based on advisories for short term conditions, such as storm events, if the conditions apply to 30 or more days in a year.

7. Other Assessment Considerations

Natural Conditions

Waterbody segments with data indicating impairment will be placed in Category 5 unless Ecology determines that the exceedance of water quality criteria is due to natural conditions or processes. Segments will be placed in Category 5 when human activities cause, or have a strong potential to cause, significant impacts in addition to natural conditions.

A determination regarding natural conditions will require information and data to validate the condition, with no presumption either way. A decision to place a waterbody segment in Category 1 because the impairment is from natural conditions will require, at a minimum, identification of a likely natural source or process sufficient to produce the impairment and information to support that there are no human impacts or none in excess of the allowable limits. The assessment may include well-reasoned best professional judgment, but this must be accompanied by information that supports the determination. Wilderness areas or other areas with no significant human impact will be assumed to represent natural conditions. Decisions about impairment are made with the data that is readily available and are not deferred or delayed because of data gaps.

State water quality standards for temperature and dissolved oxygen allow a small increment for human actions when the measurements exceed the criteria due to natural conditions. If data or information are available to determine that the human increment is below the threshold, the exceedance will not be considered a violation and a case will be made that it is due to natural conditions. In the absence of data to determine whether the exceedance is above or below the threshold allowance, the waterbody segment will be placed in Category 5. The subsequent TMDL or other analysis will further determine the extent of human influences.

Assessment of Waterbodies during TMDL Development

When a Category 5 listing triggers a TMDL, the TMDL applies to all the waterbodies within the study area or footprint of the TMDL. The TMDL is a more in-depth study that addresses which waters are violating standards, which waters are contributing to downstream violations, and what needs to be done so that all waters will meet standards. After the TMDL is initiated, but before the study is completed, assessment of data within the study area for purposes of categorization is unnecessary, and in some cases may give incomplete results. Once the TMDL study is completed, all monitored waters in the study area are placed in Category 4A. After the TMDL has been fully implemented, if all the waters in study area are meeting standards, all of the waters will be moved from Category 4A to Category 1.

Listing Challenges and Other Situations

Ecology reserves the right to make assessment decisions on matters not addressed by this policy or in a manner not in accordance with this policy as needed to address unusual or unforeseen situations. The assessment decisions will be based on available information used in accordance with the water quality standards and the relevant state and federal laws and regulations.

An objective of the listing policy is to establish which water bodies need TMDLs. The decision to place a waterbody in a given category must be based on data that is representative of the water segment at the time of sampling. Water quality monitoring projects are usually based on objectives to determine the overall quality of the water but not always. There are some projects whose objectives are to study a localized or specific sub area of the surface water, such as at the location of a discharge pipe prior to complete mixing or within a swimming beach during times of peak recreation use. The objective of the project must either match the objective of the listing policy or the project data may be pooled with other data that overall describes the condition accurately.

At any time, interested parties may contact Ecology in writing to request that an existing waterbody segment listing be reassessed under the listing factors of this policy. The request must state the reason(s) the listing is inappropriate and how the policy would lead to a different outcome and provide the data and information necessary to enable Ecology to conduct the review. The results of assessment reviews which occur between scheduled assessment cycles will become part of the next scheduled draft report to EPA.

Ecology will, in consultation with EPA, correct any errors identified in the 303(d) list or the overall water quality assessment as soon as it is aware of the error, without waiting for the next assessment cycle. Errors may include misidentified segments, misreading of the data, and similar errors. This does not apply to requests to change an assessment decision based on new data prior to the next assessment cycle nor to disagreements with Ecology's judgment in making an assessment decision.

8. Specific Submittal and Assessment Criteria

In addition to the general requirements in Section 7, specific requirements are described in the following sub-sections that apply to data addressing: bacteria, bioassessment, contaminated sediments, dissolved oxygen, pH, phosphorus, temperature, total dissolved gas, toxic substances, and turbidity.

a. Bacteria -- Fecal Coliform & Enterococci

Designated Uses:	Recreational Uses Shellfish harvesting
Numeric Criteria:	WAC 173-201A-200 (2) (b) – Fresh water contact (fecal coliform only) WAC 173-201A-210 (2) (b) – Shellfish harvesting (fecal coliform only) WAC 173-201A-210 (3) (b) – Marine water contact
Narrative Criteria:	Not applicable
Unit of Measure:	Number of colony forming units per 100mL.

Assessment Information and Specific Data Requirements:
Fecal coliform samples will be assessed by Ecology staff in the manner described below unless the assessment is conducted by the Department of Health as part of its requirements under the National Shellfish Sanitation Program for approving shellfish beds.

Sample data for bacteria may be collected in 12-month reporting periods or in reporting periods that represent distinct climatic regime of less than a year. A distinct climatic regime may be a certain season or certain months, in whatever manner is relevant to bacteria and to the waterbody. Ecology will determine the assessment periods case-by-case based on local circumstances, otherwise the assessment period will be the calendar year.

Averaging of data collected beyond a thirty-day period is not permitted when such averaging would skew the data set so as to mask noncompliance periods. The period of averaging should have sample collection dates well-distributed throughout the assessment period.

An arithmetic mean will be calculated from multiple data points collected in the same day and waterbody segment for use in assessment calculations. When collecting data in or around small sensitive areas, such as swimming beaches, it is recommended that multiple samples are taken throughout the area during each visit. Such multiple samples will be arithmetically averaged (to reduce concerns with low bias when the data is later used in calculating a geometric mean) to reduce sample variability. The resulting single representative data point for the sampling event will be used in the assessment.

Bacteria sample values collected to determine localized conditions of a swimming area during peak primary contact recreation are not representative of ambient conditions of the waterbody segment. Data collected for this purpose must be supplemented by sample values collected outside the localized area of use or during periods when the area is not being used for primary contact recreation. This allows the assessment to determine when a pollutant source other than the protected use activity is the cause of impairment and a TMDL is necessary.

Bacteria criteria may vary depending on salinity concentration in brackish waters of estuaries. In these cases, the method to determine salinity as described in WAC 173-201A-260 (3)(e) will apply. If salinity values from a sampling event are not available, the freshwater criterion will be applied for fecal coliform. For estuaries where the Enterococci standards apply, salinity data indicating marine ambient conditions must accompany bacteria data to be considered in the assessment.

The state water quality standards include provisions for determining violations based on either a mean of bacteria levels of a set of samples (geometric mean criteria) or the highest levels among the individual samples within that set (percentile criteria). The assessment decisions for bacteria are based on these provisions.

Category 5 Determination:
A minimum of five samples is required to support placement in category 5 based on geometric mean criteria. Fewer than five samples may support placement in category 5 based on the percentile criterion.

When five or more sample values from a given waterbody segment (within the assessment period described above) are available, the segment will be placed in Category 5 if either of the following two assessment methods result in an exceedance of the criterion.

1. The calculated geometric mean of all samples* from a waterbody segment exceeds the geometric mean criterion for that waterbody described in the state water quality standards.
2. A minimum of two sample values from a waterbody segment exceed the percentile criterion and 10% or more of all sample values* exceed the percentile criterion.

* Only one value per day is used in the assessment

When fewer than five samples values from a given waterbody segment are available, the segment will be placed in Category 5 only if assessment method 2, (above) results in an exceedance. (The calculated geometric mean assessment method does not apply to datasets of fewer than five sample values.)

In addition to the above assessment method, bacteria-related advisories from other government agencies may result in a Category 5 determination as described in *Agency Advisories* section of this policy.

Category 2 Determination:
A segment will be placed in Category 2 when at least one sample value exceeds the percentile criterion and the segment is not otherwise placed in Category 5.

Category 1 Determination:
A waterbody segment is place in Category 1 when at least ten samples meeting the criteria are available from a critical period or other reporting period as defined above and the waterbody segment is not otherwise included in an impaired category. A waterbody segment will be placed in Category 1 when these data show no exceedances beyond the criteria. Data collection and

reporting must meet the specific data requirements described above. Only those marine waterbody segments which are designated for secondary contact recreation may result in a Category 1 determination based on Enterococci data.

Change From a Previous Category 5 Listing

Data from the more recent reporting period available may allow a previous Category 5 listing to be moved to another category. Data eligible to result in a Category 5 change must include a sampling effort comparable to that used in the previous Category 5 determination or a sampling effort designed to target the critical period(s) in which exceedances of the criterion are more likely to occur in the waterbody segment.

Only those marine waterbody segments which are designated for secondary contact recreation may result in a movement from Category 5 based on Enterococci data. All primary contact recreation waterbody segments require fecal coliform data for a movement from Category 5.

b. Bioassessment

Beneficial Uses: Aquatic life

Narrative Criterion: WAC 173-201A-240 (2)
WAC 173-201A-310

Assessment Information and Specific Data Requirements:
The following assessment methodology relates specifically to the River Invertebrate Prediction and Classification System (RIVPACS) model for determining impairment of stream biota. Impairment determinations based on other bioassessment methods will be considered on a case-by-case basis.

Water column measurements of chemical and physical components for rivers and streams may not provide sufficient information to detect or resolve all surface water problems. Biological evaluations detect physical habitat-related impairments for which there are no criteria. For this reason, Ecology has adopted the River Invertebrate Prediction and Classification System (RIVPACS) model to help identify impairments of the biologic community.

The RIVPACS model utilizes established reference site information to determine a score from the presence of taxa relative to taxa expected to occur. These expectations are based on a set of "predictor variables" that are not affected by human activities. This value identifies, with a specified level-of-confidence, impairment beyond that which can be attributed to natural conditions. This biological assessment method supplements water column data as a direct measure for a beneficial use and to arbitrate in assessments where water chemical information does not provide a definitive conclusion or criteria are not available. The use of biological assessments can be used effectively in total maximum daily load (TMDL) studies to directly assess attainment of the aquatic life use in a waterbody segment.

Ecology strongly encourages the collection of supplemental data during biological sampling events, especially conventional and chemical pollutant parameters that may be associated with the health of the waterbody. This information is important in determining what may be causing an impaired biological community, and is necessary for making a Category 5 determination. In order to determine the appropriate category for a waterbody that has data showing an impaired biological community, pollutant monitoring must also show impairment in order to be placed in Category 5. Otherwise, the waterbody will be placed in Category 2 until further monitoring is done to determine the impairment.

Ecology has compiled the following information including, field collection protocols, taxonomic reference, and data analysis protocols for using RIVPACS models and interpreting scores.

Field Protocols and Laboratory Specifications:
Plotnikoff, R. and C. Wiseman. *Benthic Macroinvertebrate Biological Monitoring Protocols for Rivers and Streams: 2001 Revision*.
http://www.ecy.wa.gov/biblio/0103028.html

The PNAMP protocol may be used as an example for the variety of 8 ft^2 sampling strategies that can be used in Pacific Northwest rivers and streams for collecting benthic macroinvertebrates. The RIVPACS model for Western Washington can be used with any of the permutations for sampling.

Taxonomic Effort: PNW Standard Effort is located on Xerces Society web page, http://www.xerces.org/aquatic/standard.htm

Data Analysis:
The Utah State University's Western Center for Monitoring and Assessment of Freshwater Ecosystems provides publicly available tools for calculating RIVPACS scores at the following website: http://129.123.10.240/WMCPortal/DesktopDefault.aspx?tabindex=0&tabid=1

Data submittals should include the RIVPACS model score, the raw macroinvertebrate assemblage counts, an environmental matrix reporting data for predictor variables, and any other applicable information detailed in section 4 of this policy.

Category 5 Determination:
A waterbody segment will be placed in Category 5 as biologically impaired when the RIVPACS score calculated for the most recent year of available macroinvertebrate assemblage data results in a score less than 0.73 (two standard deviations in the reference distribution of scores) with companion information for a conventional or chemical pollutant parameter in the same waterbody segment that qualifies for a Category 5 listing. If a co-existing Category 5 determination for a companion chemical or physical parameter is not present, then the waterbody segment will be placed in Category 2 based on biological impairment.

Category 2 Determination:
A waterbody segment will be placed in Category 2 based on bioassessment of the benthic macroinvertebrate community when a RIVPACS score from the most recent year of available data results in a score less than 0.86 and does not otherwise qualify for Category 5. Companion environmental information will be used to determine the likely source of impairment (chemical or physical habitat) so that future investigations can focus on detection of specific stressor groups and in appropriate media.

Category 1 Determination:
A waterbody segment will be placed in Category 1 based on a bioassessment when the RIVPACS score from the most recent year of available macroinvertebrate assemblage data is equal to or greater than 0.86.

Category Change From A Previous Category 5 Listing
A Category 5 determination will be moved to Category 1 when an assessment of the most recent year of available macroinvertebrate assemblage data results in a RIVPACS score equal to or greater than 0.86.

c. Contaminated Sediments

Designated Uses:	Aquatic life
Numeric Criterion:	WAC 173-204 Sediment Management Standards
Unit Of Measure:	Depending on chemical constituent: mg/kg dry weight (ppm dry) *OR* μg/kg dry weight (ppb dry)*OR* mg/kg organic carbon (ppm carbon)

Assessment Information and Specific Data Requirements:
The Sediment Management Standards (SMS), WAC 173-204, administered by the Toxics Cleanup Program, are promulgated under the authority of chapter 90.48 RCW, Water Pollution Control Act; and chapter 70.105D RCW, Model Toxics Control Act, to establish marine, low salinity, and freshwater surface sediment management standards for the state of Washington.

Data submitted on sediment contamination may be based on either chemical or biological data. The samples must be taken from surface sediments 0-15 centimeters in depth (the biologically active zone). Sediment data must be entered into the SEDQUAL database to be considered. See www.ecy.wa.gov/programs/tcp/smu/sedqualfirst.htm for information on the SEDQUAL database and submission requirements.

Data submitted for toxic pollutants must be for the specific isomer or chemical fraction addressed in the criteria. Marine biological sediment tests must conform to WAC 173-204-315. The method detection limit for the analytes should be less than the Sediment Quality Standards (SQS). The target is to have the practical quantitation limit less than or equal to SQS. However, where the detection limit is over the SQS the sample will be considered to exceed the SQS.

Category 5 Determination:
Cleanup Sites identified in accordance with WAC 173-204-500 through 173-204-590 which do not currently have an approved Record of Decision (ROD), Cleanup Action Plan (CAP), Corrective Measure (CM), or other approved legally enforceable cleanup plan will be included on Category 5 and managed under the authority of the Toxics Cleanup Program. These sites will include those identified in the most recent Sediment Cleanup Status Report as well as identified new areas not yet included in the report that exceed the Cleanup Screening Level (CSL) levels .

For freshwater or low salinity sediments, assessment for potential listing of segments on Category 5 will be based on biological tests in accordance with WAC 173-204-330 and 173-204-340, and will be done on a case-by-case, site-specific basis.

Category 4b Determination
Contaminated sites identified in the Sediment Cleanup Status Report that have an active cleanup in process that is documented through a CAP, ROD, CM, or other approved legally enforceable cleanup plan will be placed in Category 4b. Various authorities are used to accomplish cleanup

of contaminated sediment sites. Which authority is applied depends on the site, sources of contaminants and sometimes even the liable parties. Cleanup of sediment sites is primarily conducted using either federal Comprehensive Environmental Response Compensation Liability Act (CERCLA) authority under the U.S. Environmental Protection Agency (EPA) "Superfund" program or the state cleanup laws and rules discussed in the *Introduction* section of this report. Those state cleanup authorities are the Model Toxics Control Act cleanup regulation, Chapter 173-340 WAC, and the Sediment Management Standards, Chapter 173-204 WAC. Other supporting authorities are not exempted from cleanup consideration.

Category 3 Determination:
This category is for sites where not enough usable data exists, and provides areas where it may be valuable to sample in the future. For example, this could include sites where the mean of < 3 chemistry samples exceed SQS.

Category 2 Determination:
Sites showing exceedances of the Sediment Quality Standards (SQS), as identified in the Sediment Management Standards (WAC 173-204-320 and 173-204-410) will be included. For specific details see http://www.ecy.wa.gov/programs/tcp/smu/sediment.html
This generally includes sites where:

- The mean of < 3 chemical samples exceed CSL.
- The mean of ≥ 3 chemical samples exceed SQS.
- There are biological exceedances equating to 1 – 2 biological points.

These sites have been determined to exceed the sediment quality standards and will require further investigation and monitoring to determine if the exceedances are a result of an ongoing source, historic source or a combination of both. If the exceedances are determined to be partially or completely caused by an ongoing source, then further source control efforts, pollution control actions, or other regulatory actions will be required and specified on a case-by-case basis by the Toxics Cleanup Program. If the exceedance is determined to be caused solely by an historic source then further monitoring may be required to determine if a cleanup action is needed (WAC 173-204-400 through 590).

There are no numeric sediment quality standards in WACs for chemical effects in freshwater or low salinity sediments. However, information on chemical effects in these areas can be used to place a segment in Category 2. (See Ecology, *Creation and Analysis of Freshwater Sediment Quality Values in Washington Stat*e, Pub. No. 97—323a, July 1997 and *Development of Freshwater Sediment Quality Values For Use in Washington State,* Pub. No. 03-09-088, September 2003.)

Category 1 Determination:
A site can be placed in Category 1 if it has been determined by the Toxics Cleanup Program to meet the Sediment Management Standards.

d. Dissolved Oxygen

Designated Uses:	Aquatic Life
Narrative Criterion:	WAC 173-201A WAC 173-201A
Unit of Measure:	mg/l or parts per million (PPM) Continuous: 7 Day Average of the Daily Minimum (7DADMin)

Assessment Information and Specific Data Requirements:
The water quality standards for dissolved oxygen set lower criteria limits that are designed to protect the most sensitive aquatic life uses (salmon spawning and rearing). The standards also allow a measurable decrease (0.2 mg/l) in water below natural conditions due to human actions.

The assessment of dissolved oxygen (DO) data is based on either continuous monitoring data or single sample event data. Continuous monitoring is preferred, as it provides a better representation of the waterbody condition. The use of continuous data in this assessment also reduces the concern that a single sample may result in an erroneous impairment determination. However, until improved technology leads to easy and cost effective continuous dissolved oxygen measurements, Ecology recognizes that most dissolved oxygen monitoring is performed as single sample events. Single sample data and continuous monitoring data are assessed differently to determine impairment.

Data sample values collected less frequently than one sample value per day for at least 7 days will be considered "single sample data." Data sets that include at least one sample value per day for at least 7 days and data sets from continuous monitoring will be considered "multiple sampling events."

In freshwater, where a detailed vertical profile of dissolved oxygen data is collected, Ecology will average the data values within each stratified layer when stratification exists. Naturally occurring conditions will be considered.

In marine waters, where a detailed vertical profile of dissolved oxygen data is collected, DO data should be averaged into increments that are consistent with accepted scientific practices. Naturally occurring conditions such as incoming ocean water will be considered.

Category 5 Determination:

Category 5 determinations are dependent on whether the sampling is single grab or multiple sampling events. Dissolved oxygen excursions at flow rates greater than the 7Q10 low flow rate within the latest ten years may be used to place a segment in Category 5 unless other information indicates that the excursions are primarily natural or a significant amount of compliant data exists for the segment during the critical summer period. Flow rate and 7Q10 low flow rate need

not be reported but if available, the flow rate at time of sampling and the calculated 7Q10 low flow rate will factor into the Category 5 determination.

A segment or grid will be placed on Category 5 if ten percent or more single grab sample values from the critical seasonal (June through September) and daily time period in the latest ten years are below the applicable criterion. A minimum of 3 exceedances are required for an impairment determination.

A segment will be placed in Category 5 for dissolved oxygen when at least one 7-day average daily minimum value from multiple sampling events is below the criterion.

Category 2 Determination:
A segment will be placed in Category 2 when there are fewer exceedances beyond the criteria to place in Category 5 but at least one violation of the water quality standard is determined.

Category 1 Determination:
Dissolved oxygen varies on annual and often daily cycles and impairment occurs when the water does not contain enough dissolved oxygen to protect aquatic uses. The lowest dissolved oxygen levels of the year generally occur in the early morning during a critical season which is the summer and early fall months (June through September).

Continuous Monitoring datasets with values collected at least once an hour to capture possible seasonal and diurnal excursions of the criteria will be used to place a waterbody segment in Category 1. Data collection schedules must cover the seasonal duration in which dissolved oxygen concentrations are expected to be lowest. A waterbody segment will result in a Category 1 determination when data from the latest five years show no exceedances below the criteria.

Single sample data will not be used to determine a Category 1 listing because this sampling method is insufficient information to show that the waterbody meets the dissolved oxygen criteria during the critical periods.

e. pH

Designated Uses:	Recreational Aquatic Life
Numeric Criteria:	WAC 173-201a
Narrative Criteria:	WAC 173-201a
Unit Of Measure:	pH units

Assessment Information and Specific Data Requirements:
The acceptable range of pH values and the allowable human-caused variation varies with the waterbody. If more than one sample value is available for the same location and day, the extreme sample value (largest excursion from the criteria) will be used in the assessment. Naturally occurring conditions will also be considered.

Category 5 Determination:
A segment or grid will be placed on Category 5 if ten percent or more sample values in the latest ten years exceed the applicable criterion. A minimum of 3 exceedances are required for an impairment determination.

Category 2 Determination:
A segment or grid may be placed on Category 2 if the threshold for placement in category 5 is not achieved but there are sample values demonstrating exceedance

Category 1 Determination:
A segment or grid will be placed on Category 1 if five percent or fewer sample values in the latest ten years exceed the applicable criterion. A minimum of 10 samples collected during separate weeks are necessary for a Category 1 determination

f. Total Phosphorus in Lakes

Designated Uses:	Recreational Aquatic Life
Numeric Criteria:	WAC 173-201a-230
Narrative Criteria:	WAC 173-201a-310
Unit Of Measure:	mg/L in congruence with the Ecology Environment Information Management (EIM) system. (Note: Units for total phosphorus criteria are calculated in µg/L)

Assessment Information and Specific Data Requirements:
If available, the phosphorus criterion established by a lake-specific study as described in WAC 201A-230 will be used. If a phosphorus criterion has not been established by a lake-specific study, Ecology will apply the action values designated by ecoregion in WAC 173-201A, Table 230(1) to determine impairment. In the absence of available numeric criteria based on a lake-specific study or ecoregion action value, narrative criteria will be assessed as described in section 6 of this policy. If a phosphorus assessment for a waterbody segment includes both numeric and narrative information, the assessment will be based on the narrative criteria unless more recent numeric total phosphorus data indicate that the quality of the waterbody has changed.

The collection of phosphorus data must not be grouped nor spread out over time so as to mask periods of noncompliance. For example, if there is evidence of problems with phosphorus concentrations during a season or critical period, data collection must not be limited to or primarily conducted during other times. The assessment period for total phosphorus in lakes is June through September as noted in WAC 173-201A. Ecology may define a different assessment period for certain lakes where available lake-specific data shows the critical period to be other than June 1 through September 30.

The assessment is based on the calculated arithmetic mean of four or more total phosphorus samples collected from the epilimnion during the critical period or season. When temperature profile data are available, the depth of the epilimnion will be determined by the depth of the seasonal thermocline. When temperature profile data are not available, the epilimnion will be defined as the upper three meters of the water column. If more than one epilimnion sample value is available for the same waterbody segment and day, only the maximum sample value will be used in the mean phosphorus concentration calculation.

Category 5 Determination:
A lake segment or grid will be placed on Category 5 when the calculated mean phosphorus concentration of a single season or critical period exceeds the criteria or action value for that

waterbody. A Category 5 determination may also result from narrative criteria as described in section 6 of this policy.

Category 2 Determination:
A lake segment or grid will be placed on Category 2 when fewer than 4 sample values are available from a single season or critical period and at least one value is greater than the criteria or action value for that waterbody.

Category 1 Determination:
A segment or grid will be placed on Category 1 under the following conditions:

- Four or more sample values are available in each of two or more consecutive years,
- Total phosphorus sample values are available at a frequency no less than every 15 days throughout the critical period or season.
- The arithmetic mean of the sample values for each critical period or season from each year is equal to or less than the numeric criteria for that waterbody.

g. Temperature

Designated Uses:	Aquatic life
Narrative Criterion:	WAC 173-201A WAC 173-201A
Unit of Measure:	Degrees Celsuis (C) or Degrees Fahrenheit (F) Continuous: 7 Day Average of the Daily Maximum (7DADMax)

Assessment Information and Specific Data Requirements:
The water quality standards for temperature set upper criteria limits due to human actions, and are designed to protect the most sensitive aquatic life uses (salmon spawning and rearing). The standards also allow a measurable increase (0.3 degrees C) in water temperature above natural conditions due to human actions.

To make a listing decision for temperature, Ecology will first assess numeric temperature monitoring data to determine if there are exceedances. The warmest water temperatures of the year and criteria exceedances (values greater than the criteria) generally occur during a critical season which is the summer and early fall months (June through September).

When continuous monitoring data are available, Ecology will assess the seven-day average of daily maximum temperature measurements.

Category 5 Determination:
Category 5 determinations are dependent on whether the sampling is single grab or multiple sampling events. Temperature exceedances at flow rates greater than the 7Q10 low flow rate within the latest ten years may be used to place a segment in Category 5 unless other information indicates that the exceedances are primarily natural or a significant amount of compliant data exists for the segment during the critical summer period. Flow rate and 7Q10 low flow rate need not be reported but if available, the flow rate at time of sampling and the calculated 7Q10 low flow rate will factor into the Category 5 determination.

A segment or grid will be placed on Category 5 if ten percent or more single grab sample values from the critical seasonal (June through September) and daily time period in the latest ten years exceed the applicable criterion. A minimum of 3 exceedances are required for an impairment determination.

A segment will be placed in Category 5 for temperature if at least one 7 day maximum daily average (7DADMax) sample value from multiple sampling events exceeds the criterion.

Ecology lists waters on the Category 5 list for temperature impairment when the numeric criteria are exceeded. In most cases insufficient information exists to determine the level of human influence on temperature for each listed site. This approach assumes that human influences have

contributed to the exceedance over the numeric criteria and the increase is measurable over natural conditions. While this approach may list waters as impaired for temperature without fully knowing the extent of the human influences, listings are based on existing and readily available information. In the absence of information, the waterbody will remain on Category 5 until further information or data is provided to fully determine the status of the waterbody.

After the data are assessed to determine waterbody segments that are exceeding temperature criteria, Ecology will take an additional step to determine if the water is impaired due to human influences. Any information provided through the public call for data that provides validation that human influences or natural conditions are contributing to the exceedances will be evaluated. In addition, Ecology will review land use maps and work with appropriate regional field staff to make an initial determination that human actions could be influencing the temperature exceedances. If the determination is made that potential human influences exist that could impact temperature, the waterbody segment will be placed on Category 5. TMDL or other pollution control studies will determine the extent of human influences.

Category 2 Determination

A segment will be placed in Category 2 when the data do not meet the requirements above for a Category 5 determination but show at least one exceedance of the water quality criteria.

Category 1 Determination

Continuous monitoring for temperature during the critical season is required to place a waterbody segment in Category 1. Recent sequential data from at least two years must demonstrate consistent compliance with the criteria or established natural conditions.

Total Dissolved Gas

Designated Uses:	Aquatic Life
Numeric Criterion:	WAC 173-201A WAC 173-201A
Unit of Measure	Percent (%) Saturation

Assessment Information and Specific Data Requirements:
The assessment of total dissolved gas data is based on either continuous monitoring data or single sample event data. Continuous monitoring is preferred, as it provides a better representation of the waterbody condition. The use of continuous data in this assessment also reduces the concern that a single sample may result in an erroneous impairment determination. Single sample data and continuous monitoring data are assessed differently to determine impairment.

Data sample values collected less frequently than at least one sample value per hour for at least 7 days will be considered single sample data. Data sets that include at least one sample value per hour for at least 7 days are considered to be continuous monitoring. Where a detailed vertical profile of TDG data is collected, Ecology will use the data value from the deepest location. Natural conditions will be considered.

Criteria exceedances (values greater than the criteria) generally occur during the highest flow rates of the year in the critical season which is the spring and early summer months (March through July). The criteria do not apply when flow rates exceed the 7Q10 high flow rates. Criteria exceedances may also occur below dams during critical operational conditions, such as power house shut down or start up.

The criterion limit is 110% saturation statewide, except in the Snake and Columbia River during special fish passage exemptions.

Category 5 Determination:
For single sample data, a segment will be placed in Category 5 for total dissolved gas when ten percent or more sample values during the critical season or critical operational conditions in the latest ten years exceed the applicable criterion. A minimum of 3 exceedances are required for an impairment determination.

For continuous monitoring data, the percent saturation criteria are applied as an average based on the 12 highest consecutive hourly readings in a 24 hour period. A segment will be placed in Category 5 for total dissolved gas when two or more 12 hour average values in the same year are above the criterion. The 12 highest consecutive hourly readings are not to be overlapping.

Category 2 Determination:

A segment or grid may be placed on Category 2 if the threshold for placement in category 5 or 1 is not achieved but there are events demonstrating exceedances in the latest ten years. A segment or grid may also be placed on Category 2 if evidence shows natural conditions are the cause of exceedances but data are insufficient to make a conclusive determination (e.g. the full range of flows has not been monitored).

Category 1 Determination:
Continuous monitoring datasets with 12-hour average values of data collected at least once an hour so as to capture possible seasonal and hourly excursions of the criteria will be used to place a waterbody segment in Category 1. A minimum of 3 years of continuous monitoring during the peak runoff season in years with peak flows reaching 7Q10 levels are necessary for a Category 1 determination. Below a hydropower facility, seven days of continuous monitoring below the powerhouse while it shuts down and restarts (at least once each day) are necessary for a Category 1 determination. If no 12-hour average exceeds the criterion the waterbody may be placed in Category 1.

Single sample data will not be use to determine a Category 1 listing.

i. Toxic Substances

Designated Uses:	Aquatic Life Shellfish Harvesting Recreational Water Supply
Numeric Criteria:	WAC 173-201A-240 40 CFR Part 131
Narrative Criteria:	WAC 173-201a-260 (2)(A) and (B)
Unit Of Measure:	Water column data: All substances must be reported in µg/L except for Ammonia and Chloride which must be reported in mg/L. Tissue data: All substances must be reported in µg/kg, wet weight, except dioxins/furans (ng/kg) and metals (mg/kg).

Assessment Information and Specific Data Requirements:
Toxic pollutants have significant potential to adversely affect designated water uses, aquatic biota, and public health when present at levels above those defined in water quality standards. Therefore, assessment decisions for toxic pollutants are based on detection of these substances above defined safe levels.

Measurements of instantaneous concentrations will be assumed to represent the averaging periods specified in the state surface water quality standards for both acute and chronic criteria unless additional measurements are available to calculate averages.

Data submitted for the assessment of toxic pollutants must be for the specific isomer, congener, chemical fraction, or compound group identified in the state water quality standards.

Parameter-specific data requirements and information
For further information about the following parameters see WAC 173-201A, Table 240(3).

- **Metals**
  The water quality criteria for several metals are hardness dependant. Hardness values from the same sampling event are required for assessment hardness dependant metals. Modeled or otherwise estimated hardness values are not acceptable for the purpose of this assessment.
- **Ammonia**

The water quality criteria calculation for ammonia requires sample values for temperature and pH collected during the same sampling event. Modeled or otherwise estimated temperature and pH values are not acceptable for the purpose of this assessment.

- **Polychlorinated biphenyls (PCBs)**
  The sum of one or more PCB compounds may result in an exceedance of the criteria. Due to the number of these compounds and the varying levels of their toxicity, Ecology will review PCB analyte data to determine that the most common and most toxic PCB compounds have been included in the assessment value before placing a waterbody in Category 1 for this parameter.
- **Dichlorodiphenyltrichloroethane (DDT)**
  Criteria for both Total DDT and criteria for individual isomers of DDT will be considered in the assessment. The sum of one or more isomers may result in an exceedance of the Total DDT criteria. To determine that a waterbody meets the criteria, a value must be calculated from the sum of 4,4' and 2,4' isomers of DDT, DDD, and DDE sample values.
- **2,3,7,8 TCDD (Dioxins and Furans)**
  The 17 PCDD/F congeners have different levels of toxicity compared to 2,3,7,8-TCDD, the most toxic form. To assess the cumulative risks to human and environmental health, the congener concentrations are expressed as "Toxic Equivalents" (TEQs). The TEQ is calculated by multiplying each congener result by its congener-specific Toxicity Equivalent Factor (TEF) and then summing to obtain the overall TEQ. The TEQ value will be used in the assessment of 2,3,7,8 TCDD.
  Due to the number of these congeners and the varying levels of their toxicity, Ecology will review analyte data to determine that the most common and most toxic compounds have been included in the assessment value before placing a waterbody in Category 1 for this parameter.
- **Chlordane**
  The sum of one or more of the following compounds may result in an exceedance of the criteria; cis- and trans- chlordane, cis- and trans- nonachlor, and oxychlordane. To determine that a waterbody meets the criteria (Category 1), sample values for all compounds must be available.

The National Toxic Rule's human health criteria in 40 CFR Part 131 (Federal Register Vol. 57, No. 246, and as updated) apply to waters in Washington. These human health criteria are in addition to the aquatic life-based toxics criteria found in the state standards.

The assessment of a toxic pollutant is based on data from either of two media, water column and tissue. An assessment of data from either medium may result in an impairment determination.

Water column: Metals must be sampled using clean sampling and analytical techniques, or appropriate alternate sampling procedures or techniques. (For guidance, see EPA, *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels,* 1996.)

Toxic substances criteria may vary depending on salinity concentration in brackish waters of estuaries. In these cases, the method to determine salinity as described in WAC 173-201A-260 (3)(e) will apply. If salinity data are not available, the more stringent criterion will apply.

Tissue: The toxic pollutant criteria for tissue are calculated using bioconcentration factors (BCF) that were used to derive the human health criteria in the National Toxics Rule. These values are from EPA 1980 Ambient Water Quality Criteria documents, (http://www.epa.gov/waterscience/criteria/1980docs.htm). Many of these BCFs are listed in the Human Health Criteria Calculation Matrix for EPA's 2002 National Recommended Ambient Water Quality Criteria list (http://www.epa.gov/waterscience/criteria/history.htm).

Fin fish fillet tissue samples, whole shellfish tissue samples, and edible shellfish muscle samples must have at least three single-fish samples or a single composite sample made up of at least five separate fish of the same species. Fin fish fillet tissue samples may be analyzed with skin on or skin off. All fish samples must be from resident fish to be considered for Categories 1 or 5.

Where a study area of tissue samples spans multiple waterbody segments and the catch sites are identified, all waterbody segments containing a catch site will be categorized together. A valid rationale about why the pollutants in fish caught in different segments appear to be related must be included. Where a general area is identified, but no specific catch sites, the lowest downstream segment (rivers) or the most probable centroid segment (open waters) will be placed in the appropriate category.

In addition to the above criteria, a segment will be placed in category 5 if bioassay tests show adverse effects as measured by a statistically significant response relative to a reference or control (WAC 173-201A-040(2)), and the source of impairment is known to be a pollutant. These tests will be evaluated by Ecology staff and documented on a case-specific basis consistent with WAC 173-201A-040.

Category 5 Determination:

Water column data: A segment will be placed in category 5 due to a toxic pollutant in the water column when two or more samples within a three-year period exceed the applicable criteria.

Tissue data A segment will be placed in Category 5 if either the mean of the three single-fish samples with the highest concentration of a given pollutant or one composite sample made up of at least five fish exceed the applicable criteria.

Category 2 Determination:

Water column data: A segment will be placed in Category 2 for a toxic pollutant if any one sample value exceeds the applicable criteria and the waterbody segment is not otherwise listed in Category 5 for the pollutant. If two or more samples values exceed the applicable criteria but were not collected within a three year period, the segment will be placed in Category 2.

Tissue data: A segment will be place in Category 2 when any one single-resident fish sample exceeds the applicable criteria and the segment is not otherwise listed in Category 5 for the pollutant.

For tissue samples from anadromous or other nonresident fish the segment will be placed in Category 2 if either the average of the three single-fish samples with the highest concentration of a given pollutant or one composite sample made up of at least five fish exceeds the applicable criteria.

Category 1 Determination:

Water column data: A segment will be placed in category 1 for a toxic pollutant when all of the following apply.

- At least twenty sample values within a three year period are available;
- No exceedance of the applicable criteria has been detected in the 10 years previous to the call-for-data date;
- All available data have been provided; and
- Sample data represent any critical period that has been identified in the waterbody for that pollutant.

Tissue data: A waterbody segment will be placed in Category 1 for a specific pollutant when no exceedances are present in the most recent tissue data for that pollutant.

Category Change From A Previous Category 5 Listing

A Category 5 determination will be changed if a more recent assessment qualifies a waterbody segment for placement in another category.

A more recent toxic pollutant assessment that results in a Category 5 change must be based on data from the same medium (tissue or water column) as was assessed to determine initial impairment. Such a change, based on tissue data must be from similar species or species with comparable bioaccumulation characteristics. The change of a Category 5 determination may also occur if information from a TMDL study confirms that the impairment no longer exists.

Due to local migration of species, toxic pollutant tissue studies that collect samples near Category 5 waterbody segments may be sufficient to represent more recent water quality conditions of the local area. In this case tissue data and rationale that the samples collected from an adjacent or nearby waterbody segment are comparable may be considered for change in category determination.

j. Turbidity

Designated Uses:	Recreational Aquatic Life
Numeric Criteria:	WAC 173-201a
Narrative Criteria:	WAC 173-201a
Unit Of Measure:	Nephelometric Turbidity Units (NTUs)

Assessment Information and Specific Data Requirements:
Turbidity criteria are expressed as the difference between an upstream or background value and the increased value derived at a location downstream of a source of turbidity. Depending on the use-class, the acceptable difference is either 5 or 10 NTUs over background when the background is 50 NTUs or less. When background is greater than 50 NTUs, the acceptable maximum increase is either 10 or 20 per cent. If more than one sample value is available for the same location and day, the average sample value will be used in the assessment. The upstream and downstream values are averaged independently.

Category 5 Determination:
A segment or grid will be placed on Category 5 if ten percent or more sample values in the latest ten years exceed the applicable criterion. A minimum of 3 exceedances are required for an impairment determination.

Category 2 Determination:
A segment or grid may be placed on Category 2 if the threshold for placement in category 5 is not achieved but there are events demonstrating exceedance in the latest ten years.

Category 1 Determination:
A minimum of 10 sample sets collected during separate storm runoff events are necessary for a Category 1 determination. If no more than 5 per cent of all available data exceeds the criterion, the waterbody will be placed in Category 1.

9. Prioritizing TMDLs

The waterbody segments placed in Category 5 will be prioritized by Ecology generally through the rotating basin scoping process for TMDLs. The prioritization will be based on the following primary criteria. These criteria are drawn from the Memorandum of Agreement between EPA and Ecology, statute, regulation and policy:

- Vulnerability of waterbodies to degradation
- Risks to public health, including drinking water
- Risk to aquatic life and other water-dependent wildlife, especially threatened and endangered species
- Severity of the pollution

If an impaired waterbody segment ranks high for any one of these criteria, the TMDL for that segment will be given a high priority. For example, if the pollution is severe enough to cause a high risk to public health, then it will be ranked as a high priority, even if there is no apparent vulnerability to further degradation or risk to other uses. If the segment ranks medium for any one of these criteria, and not high for any of them, the TMDL will be given a medium priority. Otherwise, it will be given a low priority.

For more information about TMDL planning visit:
http://www.ecy.wa.gov/programs/wq/303d/2002/2004_documents/prioritization_cat5.pdf

Priorities for TMDLs and cleanup activities related to sediment listings will be set by Ecology's Toxic Cleanup Program.

10. Abbreviations

CERCLA – Comprehensive Environmental Response Compensation and Liability Act (also known as Superfund)
CFR – Code of Federal Regulations
CSL – Cleanup Screening Level (for sediments)
CWA – Clean Water Act
Ecology – Washington State Department of Ecology
EPA – U.S. Environmental Protection Agency
ESA – Endangered Species Act
FERC – Federal Energy and Regulatory Commission
MOA – Memorandum of Agreement
MTCA – Model Toxic Control Act
QAPP – Quality Assurance Project Plan
QA/QC – Quality Assurance/Quality Control
RCRA – Resource Conservation and Recovery Act
SASSI – Salmon and Steelhead Statistical Inventory
SMS – Sediment Management Standards
SQS – Sediment Quality Standards

TMDL – Total Maximum Daily Load
WAC – Washington Administrative Code
WQP – Water Quality Program (of the Department of Ecology)
WQMA – Water Quality Management Area
WRIA – Water Resource Inventory Area

11. Approval

Approved: _____

David C. Peeler Date
Program Manager
Water Quality Program
Department of Ecology